

Using the Proper Batteries

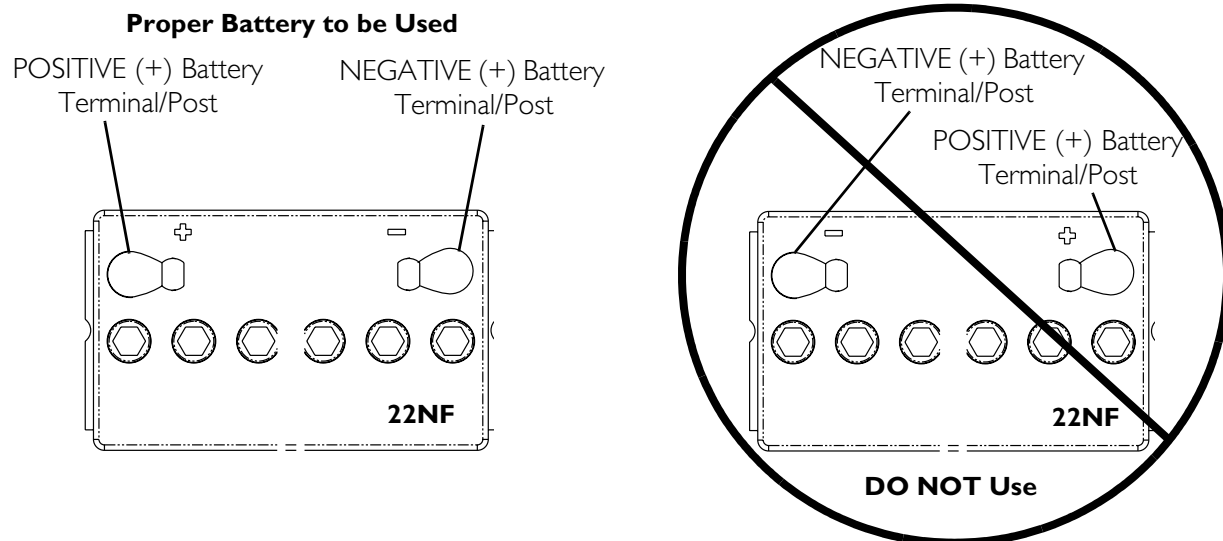
1. Place battery on ground/flat surface.
2. Visually inspect the battery to ensure the correct position of the POSITIVE and NEGATIVE terminals:

⚠ WARNING

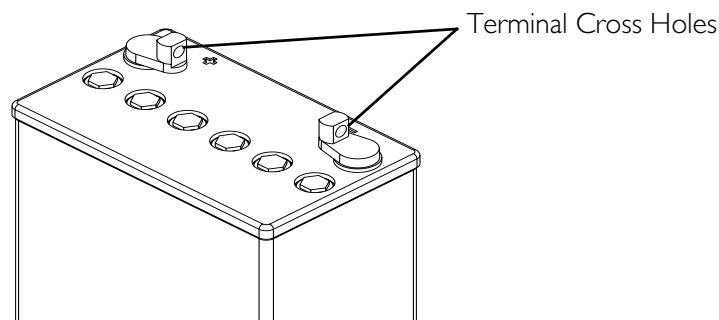
FOR WHEELCHAIRS WITH 22NF BATTERIES

Batteries with terminal configuration (**POSITIVE** on the left and **NEGATIVE** on the right) as shown below **MUST** be used. Batteries that have the reverse terminal configuration **MUST NOT** be used - otherwise injury and damage may occur.

Terminals **MUST** have a cross hole in them as shown in Detail “A” below.



DETAIL “A” - TERMINAL CROSS HOLES

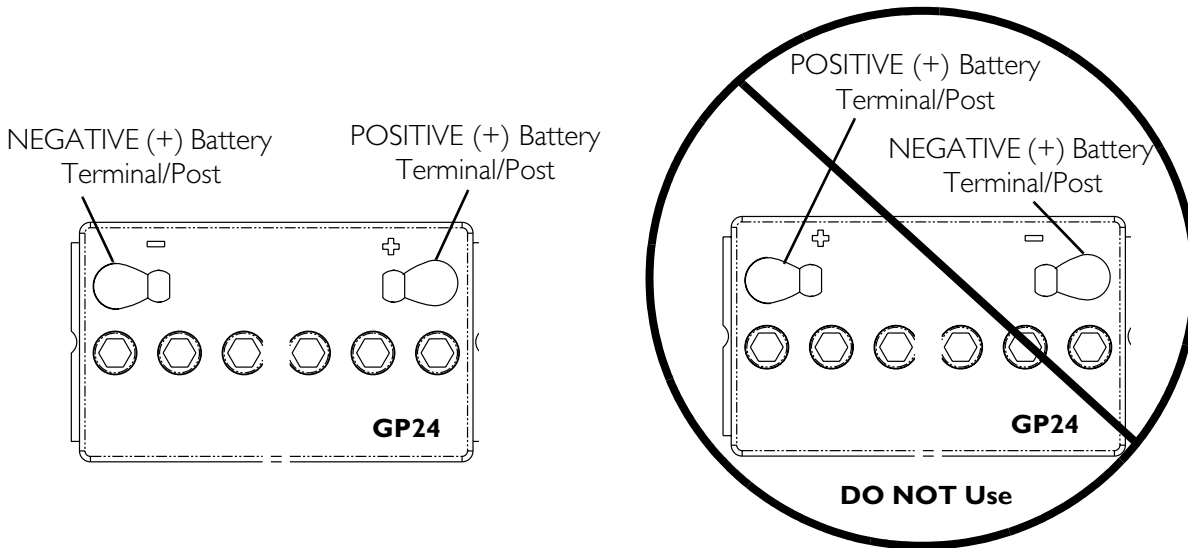


⚠ WARNING

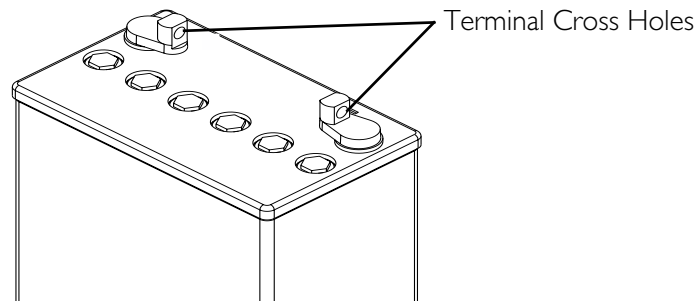
FOR WHEELCHAIRS THAT USE GP24 BATTERIES

Batteries with terminal configuration (**POSITIVE** on the right and **NEGATIVE** on the left) as shown below **MUST** be used. Batteries that have the reverse terminal configuration **MUST** not be used - otherwise injury and damage may occur.

Terminals **MUST** have a cross hole in them as shown in Detail “A” below.



DETAIL “A” - TERMINAL CROSS HOLES



Installing/Removing Batteries Into/From Battery Boxes

NOTE: For this procedure, refer to FIGURE 10.1 on page 91.

NOTE: To remove the battery(ies) from the battery box(es), reverse the following steps.

NOTE: Have the following tools available:

- Battery Lifting Strap
- 1/2-inch (6 pt) Box Wrench

⚠ WARNING

ALWAYS use a battery lifting strap when lifting a battery. It is the most convenient method and assures that the battery acid will not spill. It also helps to prolong the life of the battery.

DO NOT tip the batteries. Keep the batteries in an upright position.

The warranty and performance specifications contained in this manual are based on the use of deep cycle gel cell batteries. Invacare strongly recommends their use as the power source for this unit.

CAUTION

Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.

NOTE: If there is battery acid in the bottom or on the sides of the battery boxes or batteries, apply baking soda to these areas to neutralize the battery acid. Before reinstalling the new or existing batteries, clean the baking soda from the battery boxes or batteries.

NOTE: When securing battery lifting strap to battery, observe polarity markings located on the ends of the battery lifting strap, (+) side to POSITIVE (+) battery post and (-) side to NEGATIVE (-) battery post.

1. If necessary, remove the battery box(es) from the wheelchair. Refer to one of the following procedures:
 - Removing/Installing Group 24 Battery Boxes on page 102.
 - Removing/Installing the 22NF Battery Box on page 107.
 2. Disconnect battery cables. Refer to Disconnecting/Connecting Battery Cables on page 92 for either Group 24 batteries or 22NF batteries in a single battery box.
 3. Secure battery lifting strap to battery terminal(s)/post(s) (FIGURE 10.1).
-

CAUTION

Some battery manufacturers mold a carrying strap and/or hold down flanges directly into the battery case. Batteries which interfere with the battery box cannot be used for these applications. Attempting to “wedge” a battery into a battery box may damage the box and/or the battery.

4. Remove batteries from battery box(es).

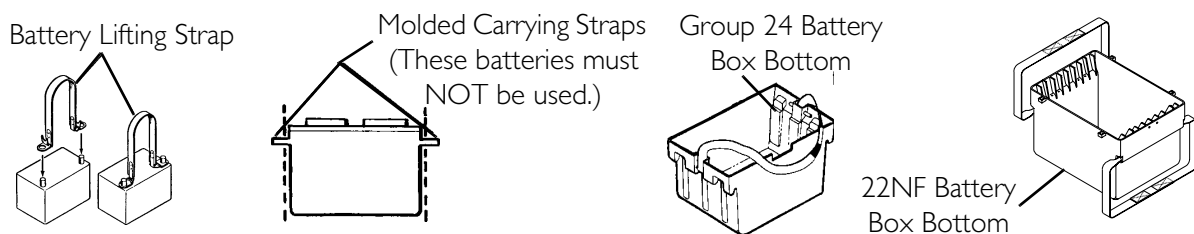


FIGURE 10.1 Installing/Removing Batteries Into/From Battery Boxes

Disconnecting/Connecting Battery Cables

⚠ WARNING

NEVER allow any of your tools and/or battery cable(s) to contact **BOTH** battery post(s) at the same time. An electrical short may occur and serious personal injury or damage may occur.

The use of rubber gloves and safety glasses is recommended when working with batteries.

When tightening the clamps, always use a box wrench. Pliers will “round off” the nuts. **NEVER** wiggle the battery terminal(s)/post(s) when tightening. The battery may become damaged.

The **POSITIVE (+) RED** battery cable **MUST** connect to the **POSITIVE (+)** battery terminal(s)/post(s), otherwise serious damage will occur to the electrical system.

Group 24 Batteries

NOTE: For this procedure, refer to FIGURE 10.2 on page 94.

Disconnecting

NOTE: Perform this section on one battery and battery box at a time. Repeat section for other battery box.

1. Lift up on battery box lid to expose underlying cables.
2. Peel back battery terminal caps to expose battery cable ends as follows:
 - A. RED battery terminal cap from RED battery cable.
 - B. BLACK battery terminal cap from BLACK battery cable.
3. Remove the locknut and mounting screw to disconnect BLACK battery cable from the NEGATIVE(-) battery terminal/post (Detail “A” of FIGURE 10.2)
4. Remove the locknut and fuse mounting screw to disconnect RED battery cable from the POSITIVE (+) battery post (Detail “A” of FIGURE 10.2).

Connecting

NOTE: Perform this section on one battery and battery box at a time. Repeat section for other battery box.

1. Position battery box top above battery as shown in FIGURE 10.2.
2. Peel back battery terminal caps to expose battery cable ends as follows:
 - A. RED battery terminal cap from RED battery cable.
 - B. BLACK battery terminal cap from BLACK battery cable.
3. Install the locknut and mounting screw to connect the BLACK battery cable to the NEGATIVE(-) battery terminal/post (Detail “A” of FIGURE 10.2).

4. Install the locknut and fuse mounting screw to connect the RED battery cable to the POSITIVE (+) battery post (Detail "A" of FIGURE 10.2).
5. Verify battery cables are correctly installed and securely tightened.

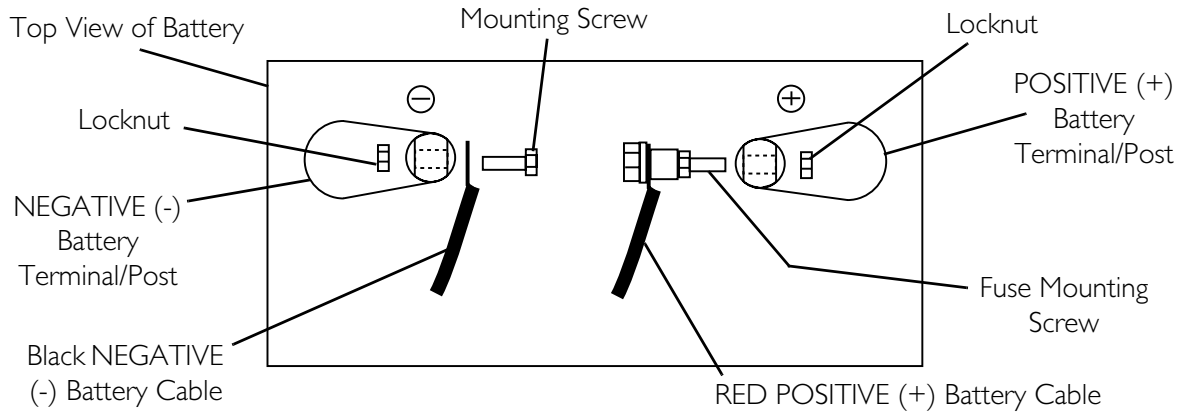
NOTE: Cables will be crossed on one connector battery box top.

6. Reposition terminal caps over battery post(s).
7. Install the battery box top(s).
8. Install the battery box(es) into the wheelchair. Refer to Removing/Installing Group 24 Battery Boxes on page 102.

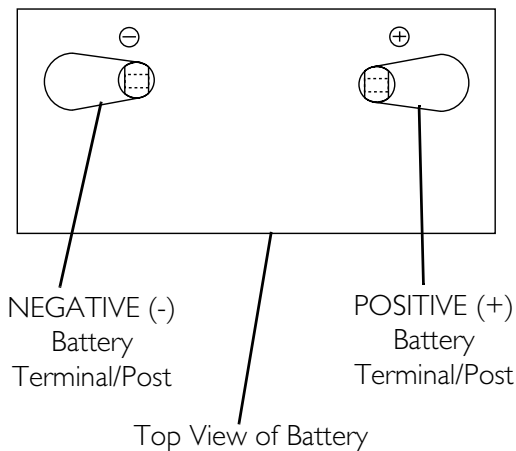
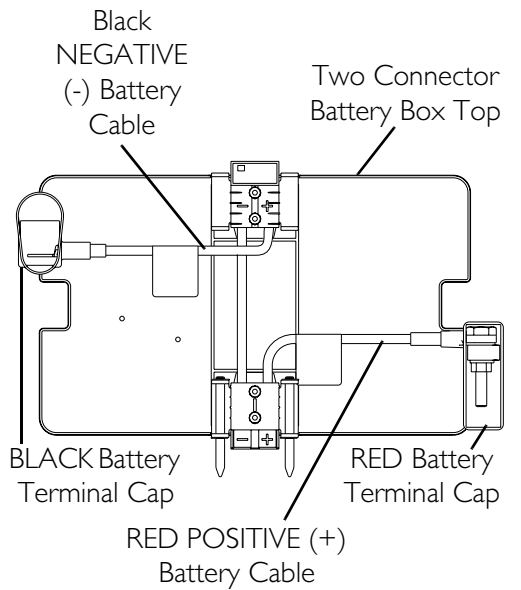
NOTE: New Battery(ies) MUST be fully charged before using, otherwise the life of the battery(ies) will be reduced.

9. If necessary, charge the battery(ies). Refer to Charging Batteries on page 97.

DETAIL “A” - CONNECTING CABLES TO TERMINALS



Two Connector Battery Box



One Connector Battery Box

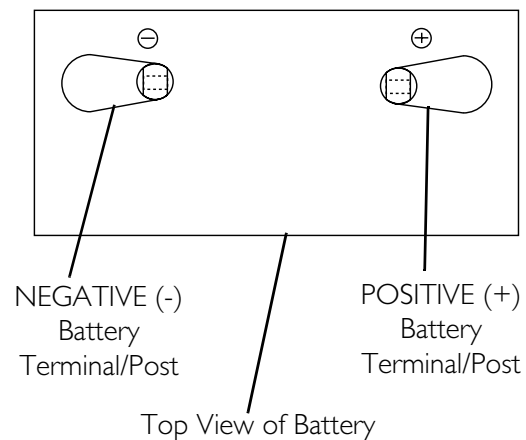
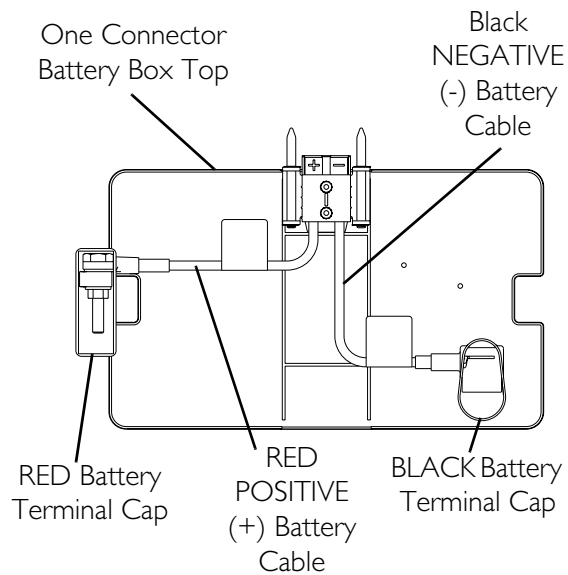


FIGURE 10.2 Disconnecting/Connecting Battery Cables - Group 24 Batteries

22NF Batteries in Single Battery Box

NOTE: For this procedure, refer to FIGURE 10.3 on page 96.

NOTE: Note polarity of white battery cable (jumper) battery terminal ends.

Disconnecting

1. Remove battery terminal cap(s) from battery terminal(s) ends. Refer to Detail A" in FIGURE 10.3.
2. Disconnect WHITE battery cable (jumper) NEGATIVE (-) terminal end from NEGATIVE (-) battery terminal/post of front battery and disconnect POSITIVE (+) terminal end from POSITIVE (+) battery terminal/post of rear battery.
3. Disconnect NEGATIVE (-) BLACK battery cable of the battery box top from NEGATIVE (-) battery terminal/post of rear battery.
4. Disconnect POSITIVE (+) RED battery cable on battery box top from POSITIVE (+) battery terminal/post of front battery.

Connecting

1. Remove battery terminal cap(s) from battery terminal(s) ends. Refer to Detail "A" in FIGURE 10.3.
2. Connect WHITE battery cable (jumper) NEGATIVE (-) terminal end to NEGATIVE (-) battery terminal/post of front battery and connect POSITIVE (+) terminal end to POSITIVE (+) battery terminal/post of rear battery.
3. Place battery top upside down on top of rear battery.
4. Connect NEGATIVE (-) BLACK battery cable of the battery box top to NEGATIVE (-) battery terminal/post of rear battery.
5. Position battery box top right side up and rotate outward toward right to expose POSITIVE (+) battery terminal/post of front battery.
6. Connect POSITIVE (+) RED battery cable on battery box top to POSITIVE (+) battery terminal/post of front battery.
7. Replace battery terminal cap(s) onto battery cable terminal end(s).
8. Rotate top toward left into position. Secure in place.
9. Install the battery box into the wheelchair. Refer to Removing/Installing the 22NF Battery Box on page 107.

NOTE: New battery(ies) MUST be fully charged before using, otherwise the life of the battery(ies) will be reduced.

10. If necessary, charge the battery(ies). Refer to Charging Batteries on page 97.

SECTION 10—BATTERIES

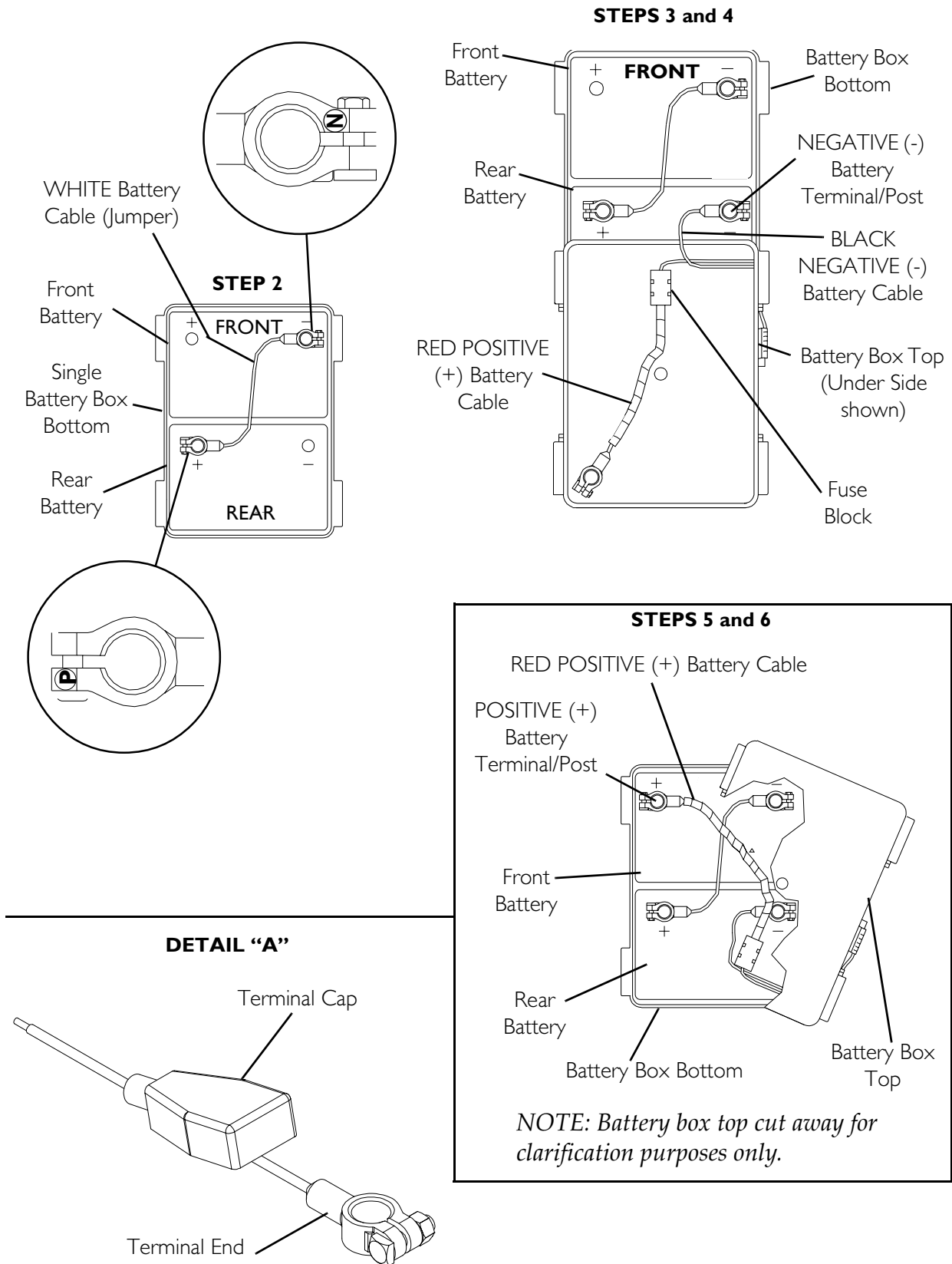


FIGURE 10.3 Disconnecting/Connecting Battery Cables - 22NF Batteries in Single Battery Box

When to Charge Batteries

NOTE: For this procedure, refer to FIGURE 10.4.

MKIV-A and MKIV-RII Joysticks

The Battery Discharge Indicator (BDI) is a bar graph display located on the MKIV joystick. It will keep you informed as to power availability. A visual warning is given before the power becomes too low to operate the wheelchair. At full charge the two Left segments and the farthest Right segment of the bar graph will be illuminated. As the battery becomes discharged, the farthest Right segment will progressively move to the Left until only the last two bars (Left) are illuminated. At this level the last two bars (Left) will start to Flash On and Off to indicate that the end user should charge the batteries as soon as possible.

MKIV-A+ Joysticks

The left half of the second line on the LCD is the Battery Discharge Indicator (BDI). It provides information on the remaining charge in the batteries. At full charge solid blocks fill in all ten segments between E (Empty) and F (Full). As the battery becomes discharged, the farthest right segments will progressively disappear a half bar at a time until no segments appear between E and F. At this level the word RECHARGE will appear on the second line to indicate that the user should charge the batteries as soon as possible.

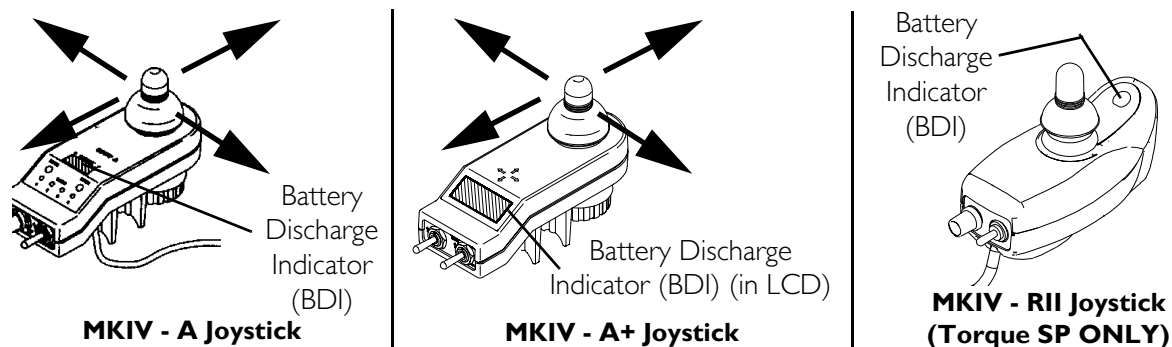


FIGURE 10.4 When to Charge Batteries

Charging Batteries

NOTE: For this procedure, refer to FIGURE 10.5 on page 100.

NOTE: New batteries MUST be fully charged prior to initial use of the wheelchair.

⚠ WARNING

NEVER attempt to recharge the batteries by attaching cables directly to the battery terminals or clamps. Always use the recharging plug located on the side of the wheelchair frame.

DO NOT attempt to recharge the batteries and operate the power wheelchair at the same time.

During use and charging, batteries may vent hydrogen gas, which is explosive in the right concentration with air.

⚠ WARNING

DO NOT sit in wheelchair while charging batteries.

CAUTION

Always charge new batteries before initial use or battery life will be reduced.

NOTE: As a general rule, batteries should be recharged daily to assure the longest possible life and minimize the required charging time. Plan to recharge the batteries when it is anticipated the wheelchair will not be used for a long period of time.

The range per battery charge using recommended batteries should be approximately 5 to 9 hours of typical operation. Extensive use on inclines may substantially reduce per charge mileage.

Description and Use of Battery Chargers

The charger automatically reduces the charge from an initially high rate to a zero reading at a fully charged condition. If left unattended, the charger should automatically stop charging when full charge is obtained.

There are some basic concepts which will help you understand this automatic process. They are:

The amount of electrical current drawn within a given time to charge a battery is called the “charge rate”. If, due to usage, the charge stored in the battery is low, the charge rate is high, as indicated by the green light on the charger. Initially, the green light will stay illuminated for a short period of time followed by a longer period of off time. As a charge builds up, the charge rate is reduced, and the green light will stay illuminated for a longer period of time followed by a shorter off time.

⚠ WARNING

NEVER leave the charger unattended when the charger circuit breaker is tripping on and off. A condition between the battery charger and batteries exists. Contact an Invacare dealer.

NOTE: If performing the charging sections independently, read and carefully follow the individual instructions for each charger (supplied or purchased).

NOTE: If charging instructions are not supplied, consult a qualified service technician for proper instructions.

NOTE: Have the following tools available:

- *Battery Charger*
- *Extension Cord**

**NOTE: 3-prong plug, 15 ampere current rating; industrial type.*

1. Perform one of the following:

- Wheelchairs Equipped with MCC-MARK IV Joystick - Attach the battery charger connector to the charger cable/battery harness.

NOTE: The battery charger connector is factory installed on the right side of the wheelchair. It can be positioned on either side of the wheelchair for user convenience.

NOTE: For Recliners Only - If the wheelchair is a recliner, the battery charger connector as well as the limit switch, are factory set on the right side of the wheelchair. However, they can be positioned on either side for user convenience. The limit switch MUST be positioned on the same side as the battery charger connector.

- Torque SP Equipped with MARK IV RII Joystick- Attach the battery charger connector to the charger port on the Front of the joystick.

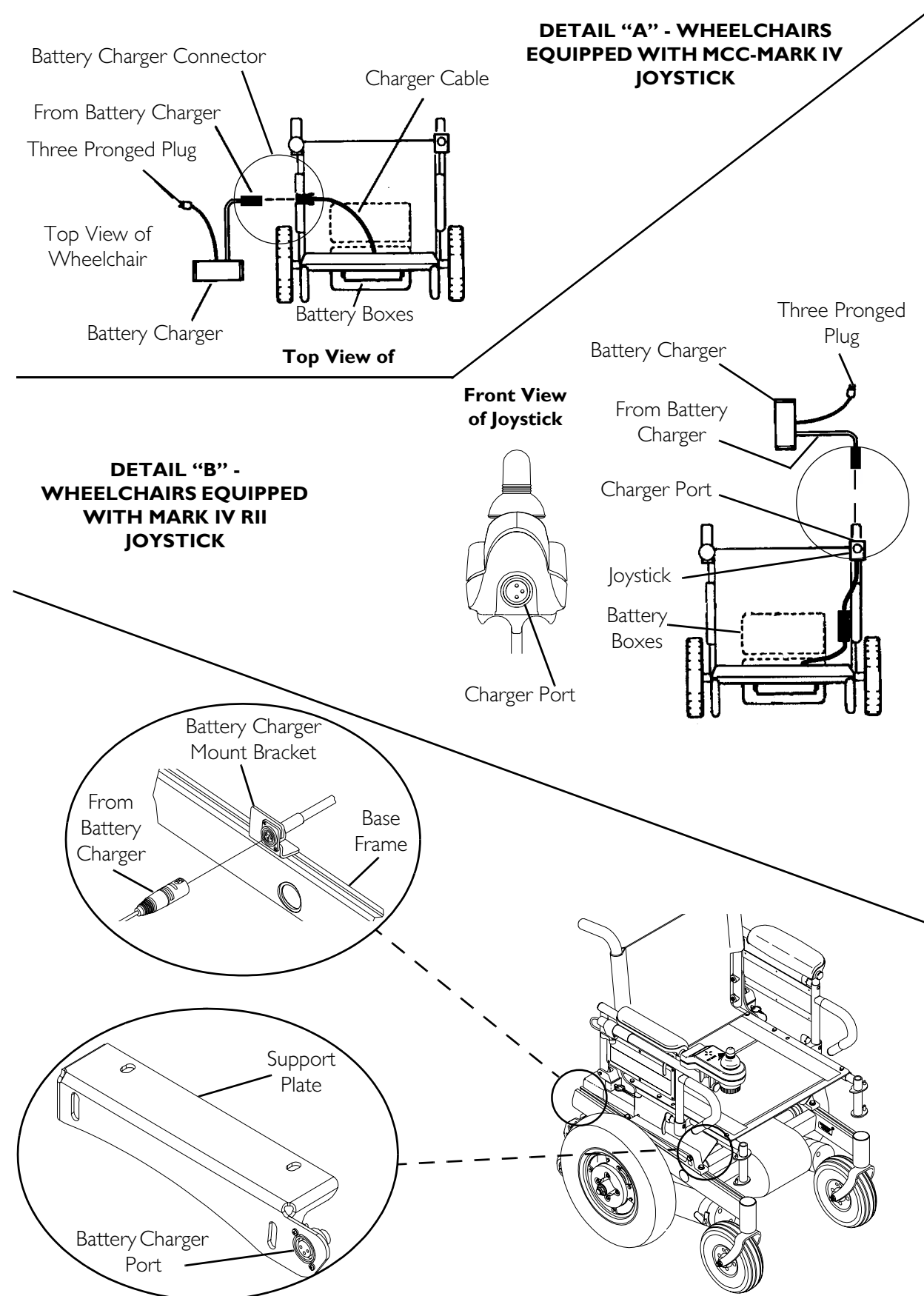
2. Plug the charger's AC power cord, or extension, into the grounded 120 VAC wall outlet.

3. Wait until charging is complete.

NOTE: It is advantageous to recharge frequently rather than only when necessary. In fact, a battery's life is extended if the charge level is maintained well above a low condition.

NOTE: If the batteries need to be charged more often or take longer to charge than normal, they may need to be replaced. Contact an Invacare dealer for service.

SECTION 10—BATTERIES

**FIGURE 10.5** Charging Batteries

Replacing Batteries

NOTE: Invacare recommends that both batteries be replaced if one battery is defective.

Recommended Battery Types

⚠ WARNING

Failure to use the correct battery size and/or voltage may cause damage to your wheelchair and give you unsatisfactory performance.

The warranty and performance specifications contained in this manual are based on the use of deep cycle gel cell batteries. Invacare strongly recommends their use as the power source for this unit.

NOTE: Both battery sizes are deep cycle batteries.

NOTE: Charge batteries daily. It is critical not to let them run low at any time.

1. Remove the battery box(es) from the wheelchair. Refer to one of the following procedures:
 - Removing/Installing Group 24 Battery Boxes on page 102.
 - Removing/Installing the 22NF Battery Box on page 107.
2. Remove existing batteries from the battery box(es). Refer to Installing/Removing Batteries Into/From Battery Boxes on page 90.
3. Clean the new battery terminals. Refer to Cleaning Battery Terminals on page 102.
4. Install the new batteries into the battery box(es). Refer to Installing/Removing Batteries Into/From Battery Boxes on page 90.

Battery Requirements and Weight Limitations

MODEL	WEIGHT LIMITATION	MOTOR	BATTERY
ARROW	Up to 400 lbs	GB	Group 24
TORQUE SP	251-300 lbs	4 Pole Motor	*22NF
	301-400 lbs	4 Pole Motor	Group 24
	Up to 400 lbs	GB	Group 24
RANGER	Up to 300 lbs	4 Pole Motor	Group 24
	Up to 300 lbs	GB	Group 24

**NOTE: Two batteries inside one battery box.*

NOTE: Weight limitation is total weight (user weight plus any additional items that the user may require [back pack, etc.]). Example: If weight limitation of the wheelchair is 300 lbs and additional items equal 25 lbs, subtract 25 lbs from 300 lbs. This means the maximum weight limitation of the user is 275 lbs.

Cleaning Battery Terminals

WARNING

Most batteries are not sold with instructions. However, warnings are frequently noted on the cell caps. Read them carefully.

DO NOT allow the liquid in the battery to come in contact with skin, clothes or other possessions. It is a form of acid and harmful or damaging burns may result. Should the liquid touch your skin, wash the area immediately and thoroughly with cool water. In serious cases or if eye contact is made, seek medical attention immediately.

1. Examine battery clamps and terminals for corrosion.
2. Verify the plastic caps are in place over battery cell holes.
3. Clean terminals and inside battery clamps by using a battery cleaning tool, wire brush, or medium grade sand paper.

NOTE: Upon completion, areas should be shiny, not dull.

4. Carefully dust off all metal particles.

Removing/Installing Group 24 Battery Boxes

Wheelchairs without Vent Tray

WARNING

Each battery weighs 51 pounds. Use proper lifting techniques (lift with your legs) to avoid injury.

CAUTION

Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.

NOTE: For this procedure, refer to FIGURE 10.6 on page 105.

Removing

1. Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.
2. Verify the joystick On/Off switch is in the Off position.

3. Wheelchairs with TRRO or TRBKTS Only - Perform the following steps:
 - A. Remove the three bolts and washers that secure the front battery retainer bracket (Detail “A”).
 - B. Remove the three short hex screws that secure the top battery retainer bracket to the lower battery retainer bracket.
 - C. Remove the four long hex screws and washers that secure the top battery retainer bracket to the rear of the wheelchair frame (Detail “B”).
 - D. Remove the top battery retainer bracket.
 - E. Remove the lower battery retainer bracket.
 4. Rotate the levers of the battery retainer assembly to the unlocked position.
 5. Lift battery retainer assembly up off the mounting screws that secure the shocks to the base frame.
- NOTE: For GB motors, ensure that the motor lock levers are in the engaged (drive) position. Refer to Motor Locks/Wheel Locks/Forks on page 109.*
6. Slide one connector battery box along the sub-frame and remove from the wheelchair.
 7. Slide the two connector battery box along the sub-frame and remove from the wheelchair.

Installing

1. Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.
2. Verify the joystick On/Off switch is in the Off position.
3. Secure the battery box carrying strap to the lid of the two connector battery box.
4. Place two connector battery box onto the battery sub-frame assembly with guide pins facing the inside of the wheelchair.
5. Slide the two connector battery box along the sub-frame until its guide pins are engaged in the sub-frame connector.

NOTE: Visually inspect to ensure the connection is properly made. Connectors MUST be fully engaged.

NOTE: Make certain that the battery box carrying strap is positioned on top of the battery box and will not interfere with the one battery box guide pins when engaging the connector on the one battery box lid.

6. Secure the battery box carrying strap to the lid of the one connector battery box.
7. Place one connector battery box onto battery sub-frame.
8. Slide one connector battery box along the sub-frame until its guide pins are engaged in the connector of the two connector battery box.

NOTE: Visually inspect to ensure the connection is properly made. Connectors MUST be fully engaged.

9. Place the battery retainer assembly on head portion of the mounting screws that secure the shocks to the base frame.

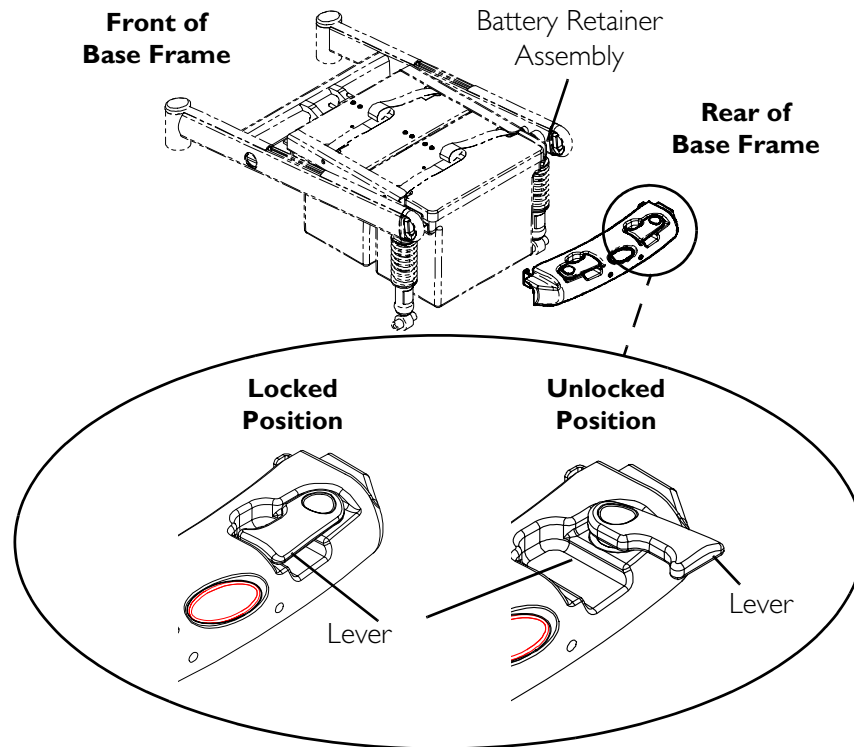
⚠ WARNING

Wheelchairs with TRRO or TRBKTS Only - Battery support brackets **MUST be installed at all times. Otherwise, the wheelchair will not be WC/19 compliant.**

CAUTION

The battery retainer assembly **MUST be locked securely to hold the battery boxes firmly in place or battery box connectors may be damaged causing erratic wheelchair operation.**

10. Rotate the levers of the battery retainer assembly to the locked position.
11. Wheelchairs with TRRO or TRBKTS Only - Perform the following steps:
 - A. Position the lower battery retainer bracket as shown in Detail “A” of FIGURE 10.6.
 - B. Install the top battery retainer bracket onto the wheelchair frame using four long hex screws and washers. Torque to 13 ft-lbs.
 - C. Secure the top battery retainer bracket to the lower battery retainer bracket using three short hex screws and washers. Torque to 13 ft-lbs.
 - D. Install the front battery retainer bracket using three bolts and washers. Torque to 13 ft-lbs.



DETAIL "A" - WHEELCHAIRS WITH TRRO OR TRBKTS

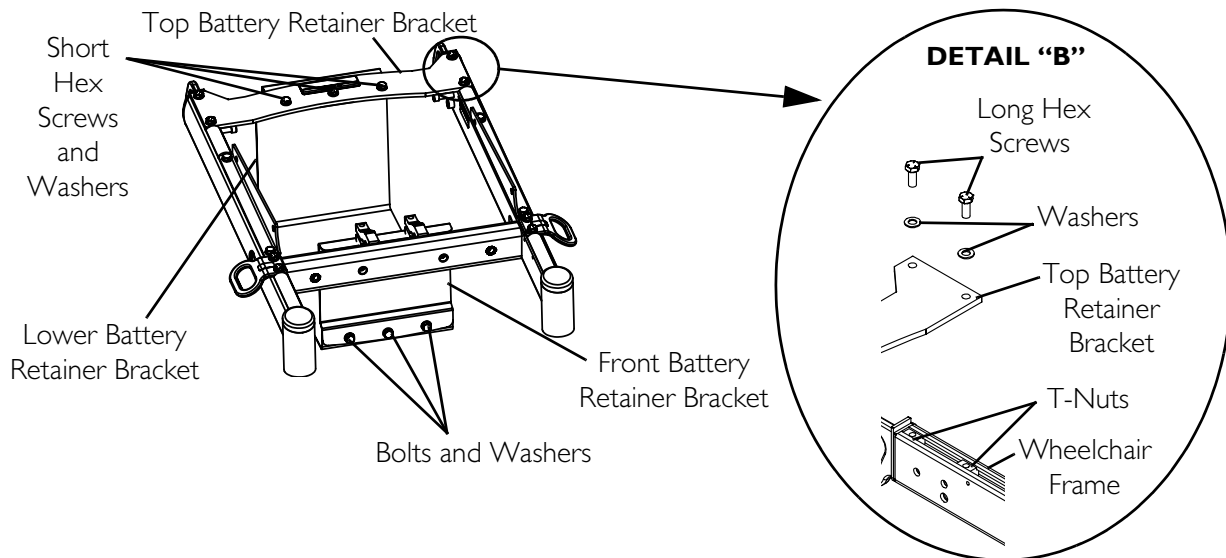


FIGURE 10.6 Removing/Installing Group 24 Battery Boxes - Wheelchairs without Vent Tray

Wheelchairs with Vent Tray

⚠ WARNING

Each battery weighs 51 pounds. Use proper lifting techniques (lift with your legs) to avoid injury.

CAUTION

Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.

NOTE: For this procedure, refer to FIGURE 10.7.

Removing

1. Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.
2. Verify the joystick On/Off switch is in the Off position.
3. Pull the battery box retainer Up over the end of the one connector battery box.
4. Slide one connector battery box along the sub-frame and remove from the wheelchair.
5. Slide the two connector battery box along the sub-frame and remove from the wheelchair.

Installing

1. Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.
2. Verify the joystick On/Off switch is in the Off position.
3. Secure the battery box carrying strap to the lid of the two connector battery box.
4. Place two connector battery box onto the battery sub-frame assembly with guide pins facing the inside of the wheelchair.
5. Slide the two connector battery box along the sub-frame until its guide pins are engaged in the sub-frame connector.

NOTE: Visually inspect to ensure the connection is properly made. Connectors MUST be fully engaged.

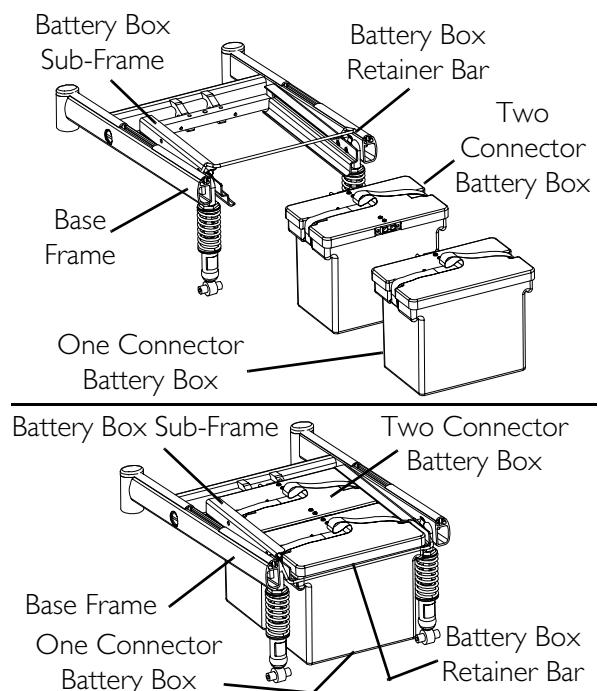


FIGURE 10.7 Wheelchairs with Vent Tray

NOTE: Make certain that the battery box carrying strap is positioned on top of the battery box and will not interfere with the one battery box guide pins when engaging the connector on the one battery box lid.

6. Secure the battery box carrying strap to the lid of the one connector battery box.
7. Place one connector battery box onto battery sub-frame.
8. Slide one connector battery box along the sub-frame until its guide pins are engaged in the connector of the two connector battery box.

NOTE: Visually inspect to ensure the connection is properly made. Connectors MUST be fully engaged.

CAUTION

The battery box retainer MUST be locked securely to hold the battery boxes firmly in place or battery box connectors may be damaged causing erratic wheelchair operation.

9. Pull the battery box retainer down over the end of the one connector battery box until it is securely clipped (locked) into place.

Removing/Installing the 22NF Battery Box

NOTE: For this procedure, refer to FIGURE 10.8.

NOTE: To install the battery box onto the wheelchair, reverse the following steps.

1. Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.
2. Verify the joystick On/Off switch is in the Off position.
3. Disconnect the battery cable from the outside of the battery box.
4. Disconnect the battery box retention strap.
5. Remove the battery box.
6. Slide the four clips that secure the battery box cover to the battery box to the Open position.

NOTE: Arrows on the battery box cover point to the open position.

7. Remove battery box cover from the battery box.

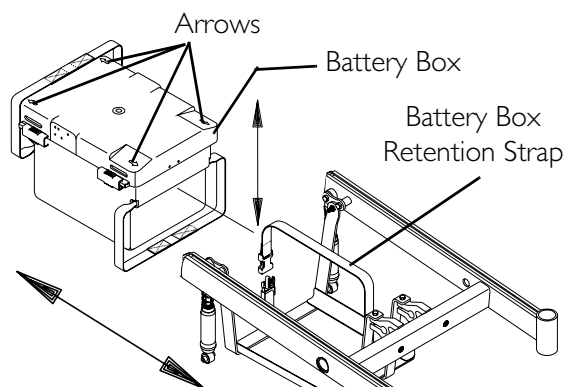


FIGURE 10.8 Removing/Installing the 22NF Battery Box

SECTION II—RETAINING STRAP

⚠ WARNING

After **ANY** adjustments, repair or service and **BEFORE** use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

Replacing Battery Box Retaining Strap - 22NF Battery Base Frames

NOTE: For this procedure, refer to FIGURE 11.1.

1. Remove the battery box. Refer to Removing/Installing the 22NF Battery Box on page 107.

⚠ WARNING

The retaining strap **MUST** be fed through the adjustable end of the battery box retaining strap clip as shown in **FIGURE 11.1**.

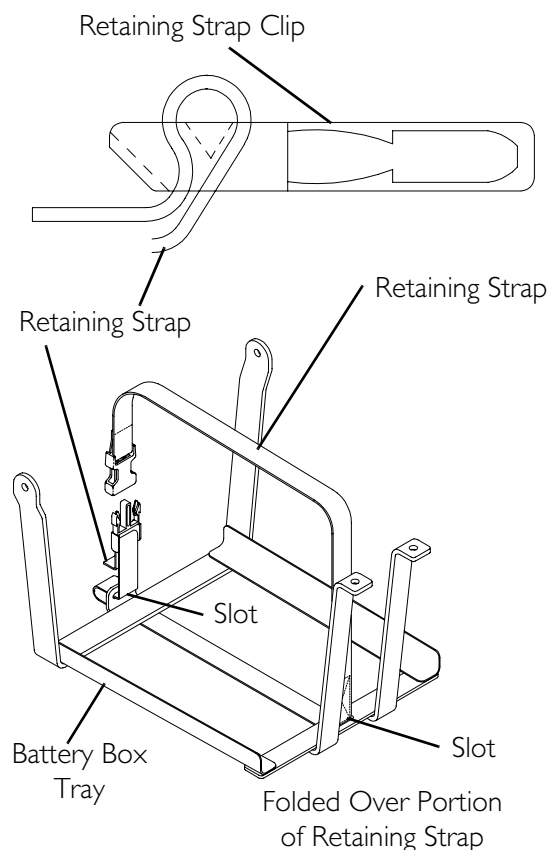
2. Feed the battery box retaining strap through the adjustable end of the battery box retaining strap clip.
3. Feed the battery box retaining strap through the slots in the battery box tray.

NOTE: The folded over portion of the retaining strap stops at the slot. DO NOT try to force the folded over section through the slot.

4. Install the new battery box retaining strap by reversing STEPS 2 and 3.
5. Reinstall the battery box. Refer to Removing/Installing the 22NF Battery Box on page 107.

⚠ WARNING

The **Battery Box Retaining Strap MUST** be fastened securely in place before using the wheelchair.



NOTE: Tray shown by itself for clarity. There is no need to remove the tray from the wheelchair if the strap is being replaced.

FIGURE 11.1 Replacing Battery Box Retaining Strap - 22NF Battery Base Frames

SECTION 12—MOTOR LOCKS/ WHEEL LOCKS/FORKS

⚠ WARNING

After **ANY** adjustments, repair or service and **BEFORE** use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

CAUTION

As with any vehicle, the wheels and tires should be checked periodically for cracks and wear, and should be replaced.

Disengaging/Engaging Motor Lock Levers

⚠ WARNING

DO NOT engage or disengage motor locks until the power is in the **OFF** position.

NOTE: For this procedure, refer to FIGURE 12.1.

NOTE: Motor lock disengagement/engagement allows free wheeling or joystick controlled operation. Free wheeling allows an assistant to maneuver the wheelchair without power.

4 Pole Motors

1. Perform one of the following:
 - Disengage (Push) - Push motor lock levers downward.
 - Engage (Drive) - Pull motor lock levers upward.

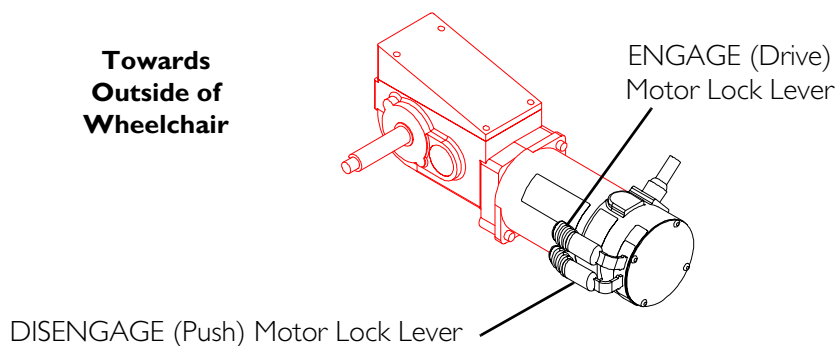


FIGURE 12.1 Disengaging/Engaging Motor Lock Levers

GB Motors

NOTE: For this procedure, refer to FIGURE 12.2.

1. Perform one of the following (Detail "B"):

 - Engage (Drive) - Pull motor lock lever into Up position.
 - Disengage (Push) - Push motor lock lever into Down position.

NOTE: Effort to engage/disengage motor lock levers is 25 to 30 pounds.*

**NOTE: Force to operate motor lock lever exceeds ANSI/RESNA WC/VOL2-1998 requirements for section 14.7 paragraph 7.2d.*

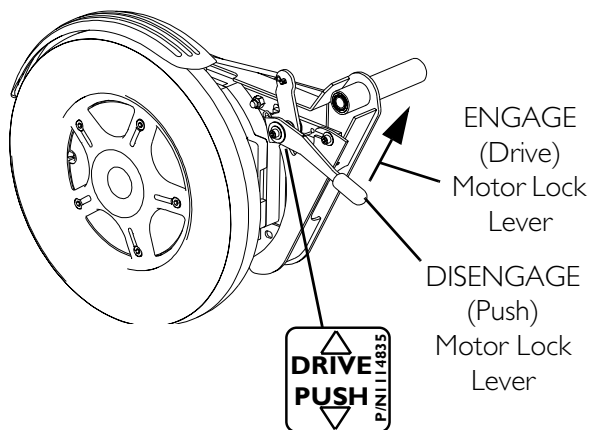


FIGURE 12.2 GB Motors

Using Optional Wheel Hubs

NOTE: For this procedure, refer to FIGURE 12.3.

NOTE: Wheel hubs are not available on Heavy Duty GB motors.

1. Perform one of the following:
 - Disengage (Free Wheel) - Pull OUT on engagement knob and rotate engagement knob approximately 1/6-turn until the pins on the engagement knob fall into the free wheel detents on the wheel hub (Detail "A").
- NOTE: If the pins on the engagement knob are not in the free wheel detents, the engagement knobs can engage the motors unexpectedly while the wheelchair is being pushed.*
- Engage (Drive) - Pull OUT on engagement knob and rotate engagement knob approximately 1/6-turn until the pins on the engagement knob fall into the holes in the wheel hub and axle sleeve. Gently rock the wheelchair until the engagement knob snaps into place (Detail "B").

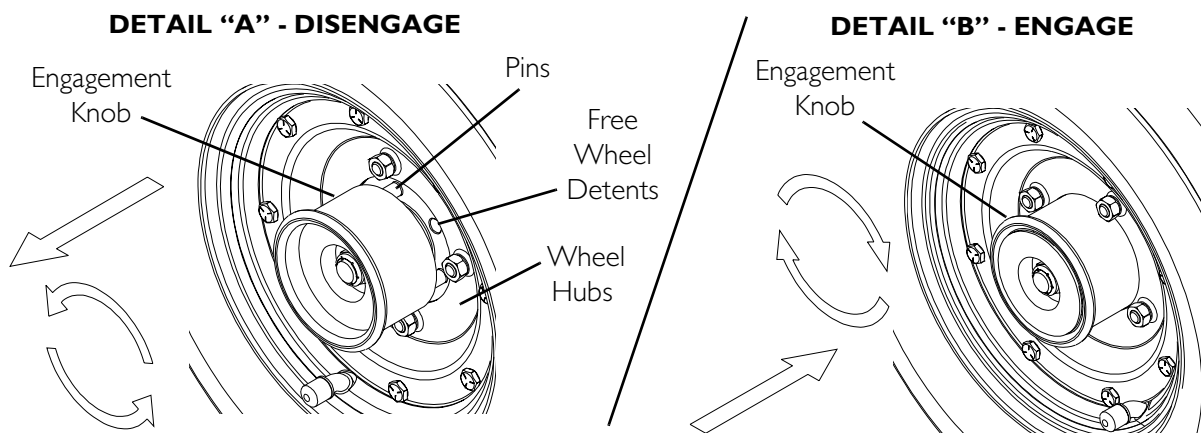


FIGURE 12.3 Using Optional Wheel Hubs

Installing Wheel Locks

⚠ WARNING

Inasmuch as **Wheel Locks** are an option on this wheelchair - (You may order with or without the wheel locks.) - transfer to and from the wheelchair in the presence of a qualified healthcare professional to determine individual safety limits. Invacare strongly recommends ordering the wheel locks as an additional safeguard for the wheelchair user.

Wheel Lock Installation Identification

NOTE: For this procedure, refer to FIGURE 12.4.

1. Examine the motor and perform one of the following:

- Motor assembly Resembles FIGURE 12.4 - Refer to Installing Wheel Locks for Motor/Gearbox Assemblies on page 111.
- Motor Assembly Does Not Resemble FIGURE 12.4 - Refer to Installing Wheel Locks for GB Motors on page 112.

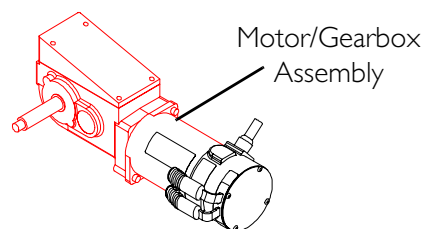


FIGURE 12.4 Wheel Lock Installation Identification

Installing Wheel Locks for Motor/Gearbox Assemblies

NOTE: For this procedure, refer to FIGURE 12.5.

NOTE: Refer to Detail "B" in FIGURE 12.5 for proper positioning of wheel locks.

1. Position the wheel lock on the outside of the wheel lock mounting bracket and the wheel lock link on the inside of the wheel lock bracket.
2. Loosely assemble the wheel lock and wheel lock link to the wheel lock mounting bracket with the two mounting screws provided.

NOTE: The two mounting screws will screw into the wheel lock link.

3. Repeat STEPS 1-2 for the opposite wheel lock.
4. Adjust the wheel locks. Refer to Adjusting Wheel Locks on page 112.

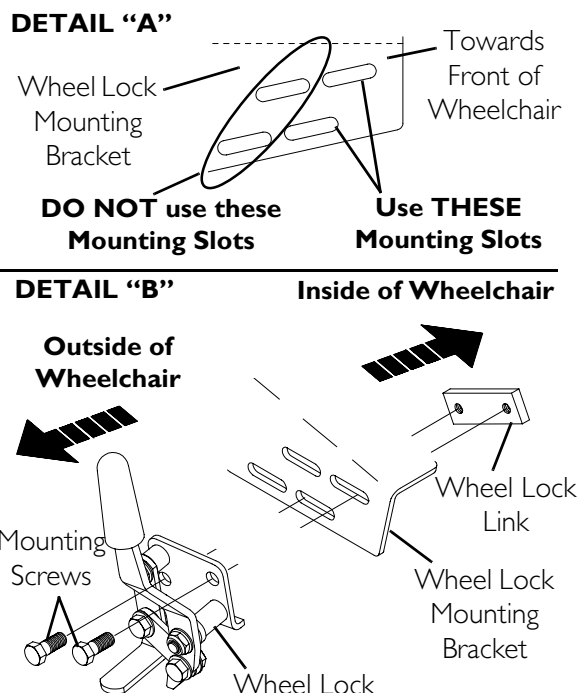


FIGURE 12.5 Installing Wheel Locks for Motor/Gearbox Assemblies

Installing Wheel Locks for GB Motors

NOTE: For this procedure, refer to FIGURE 12.6.

1. See Detail "A" to determine the correct mounting position for the wheel lock based on the motor mounting position.

NOTE: Refer to Percentage of Weight Distribution on page 32 for a description of the motor mounting positions.

2. Loosely install the wheel lock onto the mounting bracket using the mounting holes determined in STEP 1 and two hex screws and two washers.
3. Repeat STEP 2 for the opposite wheel lock.
4. Adjust the wheel locks. Refer to Adjusting Wheel Locks on page 112.

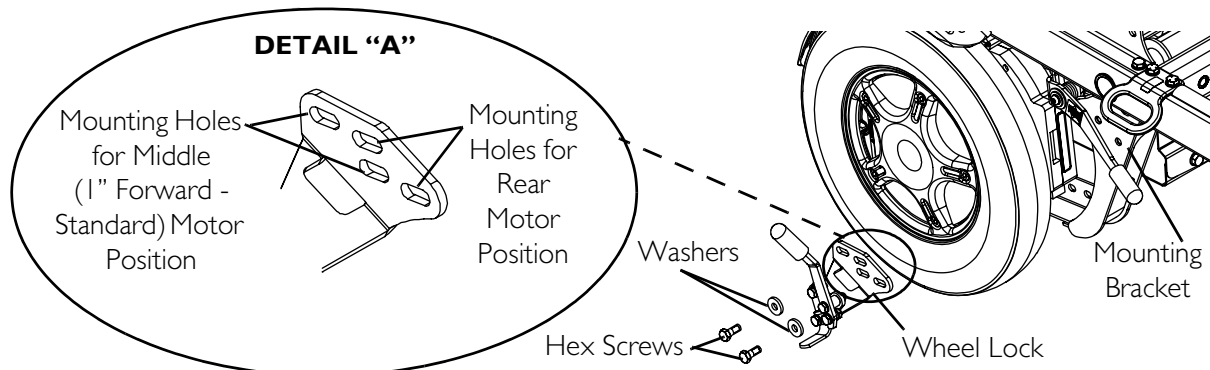
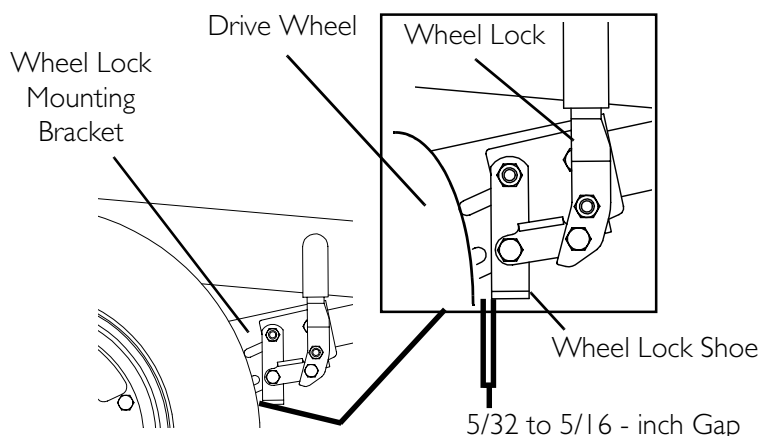


FIGURE 12.6 Installing Wheel Locks for GB Motors

Adjusting Wheel Locks

NOTE: For this procedure, refer to FIGURE 12.7 on page 113.

1. Make sure wheel lock is disengaged from drive wheel.
2. Measure distance between the Wheel Lock Shoe and the Drive Wheel.
3. Loosen the two hex screws securing the wheel lock to the mounting bracket.
4. Slide the wheel lock along the slots until the measurement is between 5/32 and 5/16-inches. Securely tighten mounting screws.
5. Repeat STEPS 1-3 for the opposite wheel lock.
6. Disengage motor locks. Refer to Disengaging/Engaging Motor Lock Levers on page 109.
7. Engage the wheel locks and push against the wheelchair to determine if the wheel locks engage the drive wheels enough to hold the wheelchair.
8. Repeat STEPS 2-7 until the wheel locks engage the drive wheels enough to hold the wheelchair.
9. Engage motor locks. Refer to Disengaging/Engaging Motor Lock Levers on page 109.



NOTE: Illustration depicts wheel lock for motor/gearbox assembly.

FIGURE 12.7 Adjusting Wheel Locks

Adjusting Forks

NOTE: For this procedure, refer to FIGURE 12.8.

1. Remove the dust cover (not shown) from the caster headtube.
2. To properly tighten caster journal system and guard against flutter, perform the following check:
 - A. Tip back the wheelchair to floor.
 - B. Pivot both forks and casters to top of their arc simultaneously.
 - C. Let casters drop to bottom of arc (wheels should swing once to one-side, then immediately rest in a straight downward position).
 - D. Adjust locknuts according to freedom of caster swing.
3. Test wheelchair for maneuverability.
4. Readjust locknuts if necessary, and repeat STEPS 1-3 until correct.
5. Snap dust cover into the caster headtube.

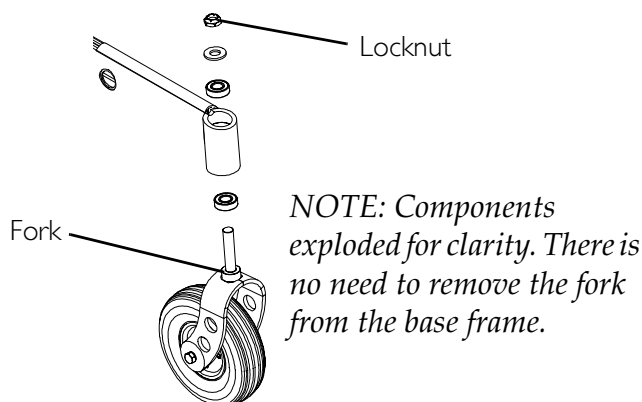


FIGURE 12.8 Adjusting Forks

SECTION 13—ELECTRONICS

⚠ WARNING

After ANY adjustments, repair or service and BEFORE use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result.

Preparing MKIV Joystick for Use

NOTE: For this procedure, refer to FIGURE 13.1.

NOTE: The MKIV joystick is factory installed on the right side of the wheelchair. To reposition the MKIV joystick onto the left side of the wheelchair, refer to Repositioning MKIV Joystick on page 114.

1. Turn the adjustment lock lever to release the adjustment lock from joystick mounting tube.
2. Slide joystick mounting tube to the desired position.
3. Turn the adjustment lock lever to secure the adjustment lock to the joystick mounting tube.

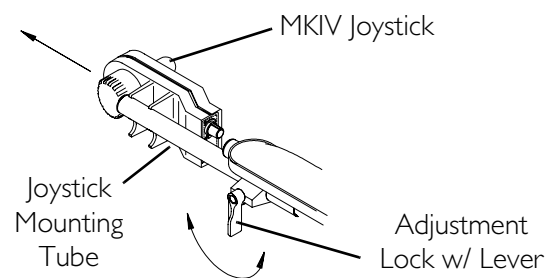


FIGURE 13.1 Preparing MKIV Joystick for Use

Repositioning MKIV Joystick

NOTE: For this procedure, refer to FIGURE 13.2.

1. Turn the adjustment lock lever to release the joystick mounting tube from the mounting bracket.
2. Remove the joystick from the wheelchair.
3. Remove the three hex screws that secure the both halves of the mounting bracket to the arm tube.
4. Reposition mounting bracket on opposite arm tube ensuring the threaded plate of the mounting bracket is on the inside of the arm tube as shown in FIGURE 13.2.
5. Using the three hex mounting screws and washers, secure both halves of the mounting bracket to the arm tube.
6. Slide the joystick mounting tube through the mounting bracket to the desired position.
7. Turn the adjustment lock lever to secure the joystick mounting tube into the mounting bracket.

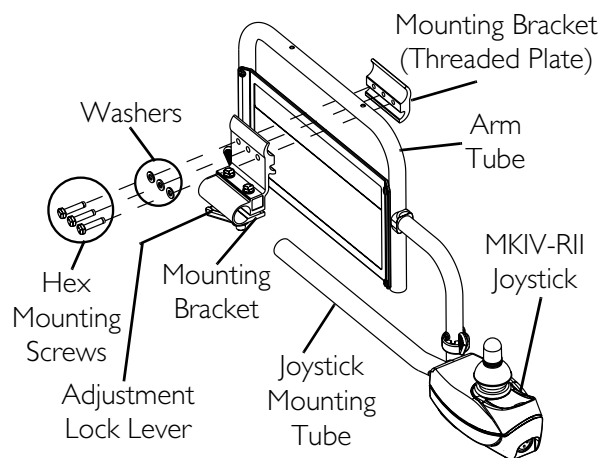


FIGURE 13.2 Repositioning MKIV Joystick

SECTION 14—RECLINER

⚠ WARNING

After **ANY** adjustments, repair or service and **BEFORE** use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

NEVER operate the wheelchair while in any recline position over 105° relative to the seat frame. If the limit switch does not stop the wheelchair from operating in a recline position greater than 105° relative to the seat frame, **DO NOT** operate the wheelchair. Have the limit switch adjusted by a qualified technician.

Both gas cylinders **MUST** be operational and adjusted properly **BEFORE** using the recliner. **DO NOT** operate the recliner option if only one of the gas cylinders is operational or adjusted properly.

When using the recliner option, the motor/gearbox or motor **MUST** be mounted to the **MOST** rearward mounting holes on the suspension arm assembly.

TO HEALTHCARE PROFESSIONALS/ASSISTANTS:

Make sure the occupant of the wheelchair is properly positioned.

When returning the occupant of the wheelchair to the full upright position, more body strength will be required for approximately the last twenty degrees of incline (reverse recline). Make sure to use proper body mechanics (use your legs) or seek assistance if necessary to avoid injury.

Recliner Operation

NOTE: For this procedure, refer to FIGURE 14.1.

1. Make sure the wheelchair is on a level surface.
2. Inform the occupant of the wheelchair that the wheelchair is about to be reclined.
3. Stand behind the wheelchair and grasp both back canes firmly.
4. Pull up on the handles of the recliner cable assemblies to release the gas cylinders.
5. Slowly, push down on the back canes while squeezing the handles of the recliner cable assemblies in a continuous motion.
6. When the back reaches the desired angle, slowly let go of the handles of the recliner cable assemblies.
7. To return the back to the full upright position, reverse the above steps keeping in mind proper body mechanics.

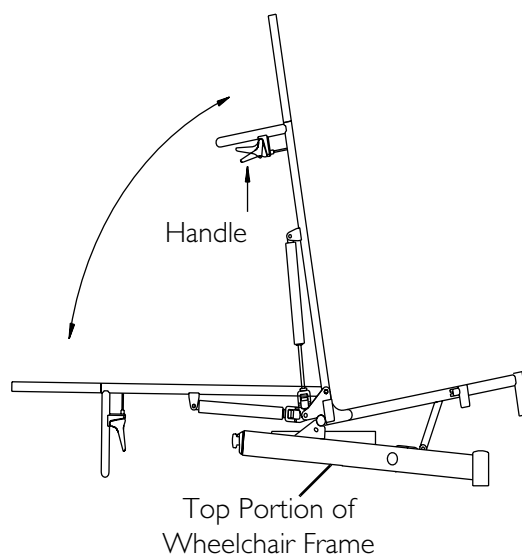


FIGURE 14.1 Recliner Operation

Replacing Back or Headrest Upholstery

NOTE: For this procedure, refer to FIGURE 14.2.

Replacing Back Upholstery

1. Remove the ten or twelve mounting screws (depending on back height) that secure the back upholstery to the back canes.
2. Remove existing back upholstery from back canes.
3. Install the new back upholstery onto the back canes.
4. Install the ten or twelve mounting screws (depending on back height) that secure the back upholstery to the recliner back canes.
5. Adjust the back upholstery to the desired tautness. Refer to Adjusting Back or Headrest Upholstery on page 117.

NOTE: Changing the back upholstery height must be performed by an authorized dealer or qualified technician.

Replacing Headrest Upholstery

1. Remove the six mounting screws that secure the headrest upholstery to the headrest extensions.
2. Remove the existing headrest upholstery from the headrest extensions.
3. Install the new headrest upholstery onto the headrest extensions.
4. Install the six mounting screws that secure the headrest upholstery to the headrest extensions.
5. Adjust the headrest upholstery to the desired tautness. Refer to Adjusting Back or Headrest Upholstery on page 117.

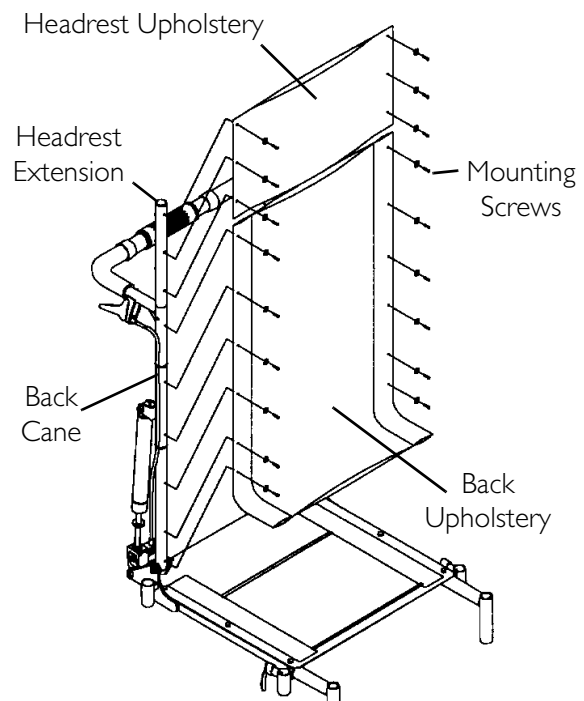


FIGURE 14.2 Replacing Headrest Upholstery

Adjusting Back or Headrest Upholstery

NOTE: For this procedure, refer to FIGURE 14.3.

1. Rotate the spreader bar either:
 - Counterclockwise (away from back upholstery) to loosen back/headrest upholstery.
 - Clockwise (towards back upholstery) to tighten back/headrest upholstery.

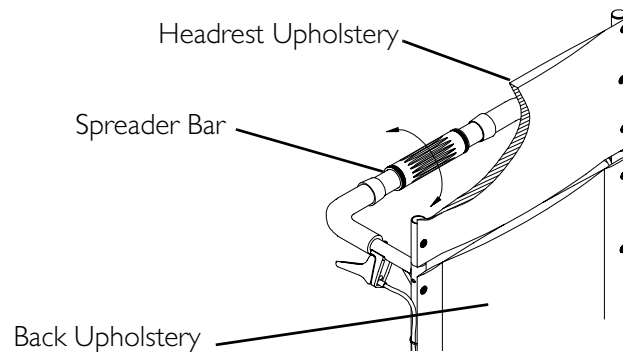


FIGURE 14.3 Adjusting Back or Headrest Upholstery

SECTION 15—VENTILATOR TRAY

⚠ WARNING

After **ANY** adjustments, repair or service and **BEFORE** use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

Before adjusting, repairing or servicing the seating system, **ALWAYS** turn the wheelchair power **OFF**, otherwise, injury or damage may result.

Pinch points exist between seat and base frames. Use caution, otherwise injury may occur.

Using the Optional Ventilator Tray

⚠ WARNING

Maximum weight capacity for the vent tray is 40 lbs ± 20%. **DO NOT** exceed weight capacity for vent tray - otherwise, injury or damage may occur.

Reduced tilt/recline limits apply. See the electronics manual listed in Reference Documents on page 2 of this manual.

CAUTION

This ventilator tray was designed to hold a ventilator that is approximately 13 inches long, 14½ inches wide, and 14 inches high. Use of ventilators larger than the above specifications may result in damage to the ventilator or stability issues.

Verify that the headrest support does not interfere with ventilator at all recline angles.

NOTE: For this procedure, refer to FIGURE 15.1.

NOTE: This procedure applies to 2G Tarsys seating systems only.

1. Position straps to the outside of the ventilator tray.
2. Position the ventilator (not shown) on the ventilator tray.
3. Secure strap around the ventilator and clip together.
4. Position the ventilator battery box in the battery tray (Detail “A”).
5. Secure strap around the battery box and clip together.
6. Securely tighten the straps around the ventilator by pulling the ends of the strap through the rear portion of each buckle (Detail “B”).

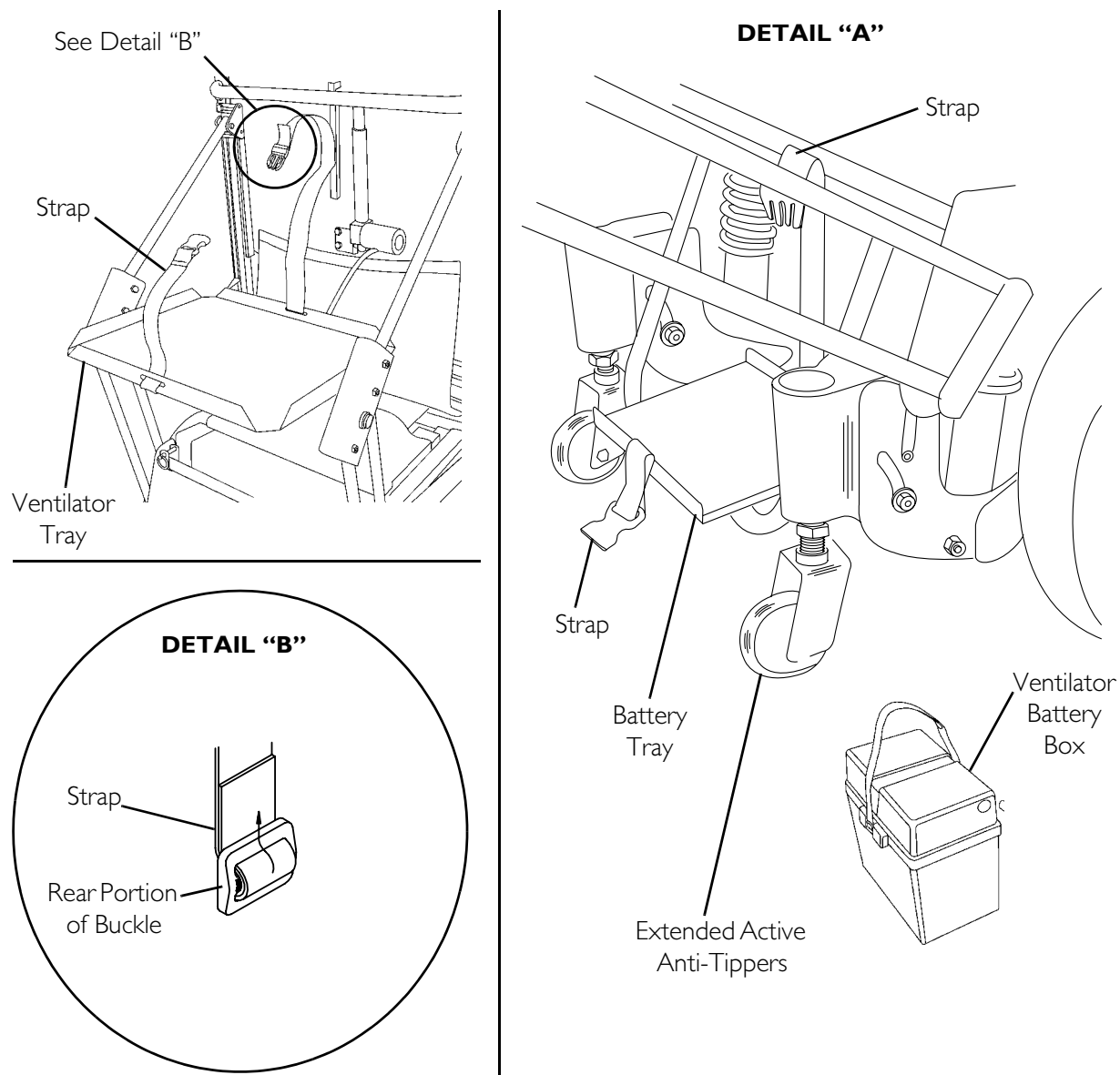


FIGURE 15.1 Using the Optional Ventilator Tray

SECTION 16—ANTI-TIPPERS

⚠ WARNING

After **ANY** adjustments, repair or service and **BEFORE** use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

Before adjusting, repairing or servicing the seating system, **ALWAYS** turn the wheelchair power **OFF**, otherwise, injury or damage may result.

Pinch points exist between seat and base frames. Use caution, otherwise injury may occur.

Anti-Tippers must be used at all times. When outdoors on wet, soft ground or on gravel surfaces, anti-tippers may not provide the same level of protection against tip over. Extra caution must be observed when traversing such surfaces.

Adjusting the Extended Active Anti-Tippers

⚠ WARNING

Wheelchairs equipped with ventilator tray **MUST** have extended active anti-tippers installed, otherwise, injury or damage may occur.

Wheelchairs that are **NOT** equipped with optional ventilator tray **MUST** have either the standard anti-tippers or the optional extended active anti-tippers installed, otherwise, injury or damage may occur. Refer to Detail “A” and Detail “B” in FIGURE 16.1.

NOTE: For this procedure, refer to FIGURE 16.1 on page 121.

NOTE: This procedure applies to 2G Tarsys seating systems only.

NOTE: The extended active anti-tippers are standard when the wheelchair is equipped with a ventilatory tray.

NOTE: The recommended height requirement for the anti-tippers, which is factory preset, is ¼-inch off the ground/floor.

1. Loosen locknuts A, B and C.
2. Lift anti-tipper and place ¼-inch block underneath the wheel.
3. Tighten locknut A upward against the bearing.
4. Tighten locknut B upward against locknut A.
5. Tighten locknut C downward against bearing inside anti-tip assembly.
6. Remove ¼-inch block.
7. Repeat STEPS 1-6 for the remaining anti-tip assembly.
8. Install the dust cover onto each anti-tip assembly.

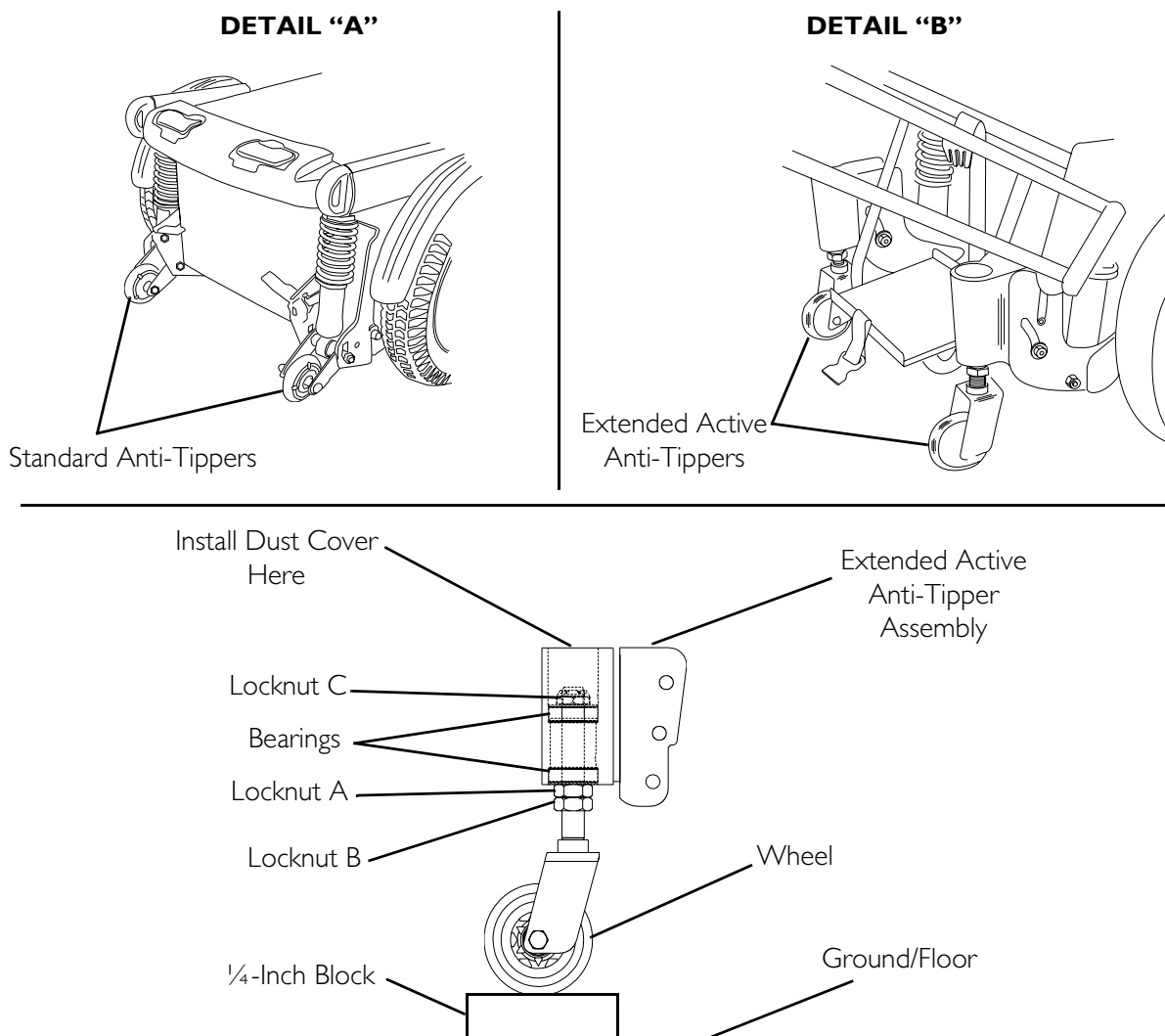


FIGURE 16.1 Adjusting the Extended Active Anti-Tippers

SECTION 17—TRANSPORT READY PACKAGE

NOTE: The information in this section is for wheelchairs ordered with the transport ready package ONLY.

⚠ WARNING

Contact Invacare Corporation (800-333-6900) with any questions about using this wheelchair for seating in a motor vehicle.

When feasible, wheelchair occupants should transfer into the vehicle seat and use the OEM (Original Equipment Manufacturer) vehicle-installed restraint system.

This wheelchair has been dynamically tested in a forward-facing mode with the specified crash test dummy restrained by **BOTH** pelvic and upper-torso belt(s) (shoulder belts), and that **BOTH** pelvic and upper-torso belt(s) should be used to reduce the possibility of head and chest impacts with vehicle components.

Use **ONLY** Wheelchair Tie-down and Occupant Restraint Systems (WTORS) which meet the requirements of the SAE (Society of Automotive Engineers) J2249 Recommended Practice during travel in a motor vehicle.

This wheelchair has been tested for seating in a motor vehicle with the factory installed seating system **ONLY**.

This wheelchair **MUST** be in a forward facing position during travel in a motor vehicle.

This wheelchair is equipped and has been dynamically tested to rely on **WHEELCHAIR-ANCHORED** pelvic belts. If desired, **VEHICLE-ANCHORED** pelvic belts may be used.

IT IS STRONGLY RECOMMENDED THAT BOTH PELVIC AND UPPER-TORSO BELT(S) BE USED TO REDUCE THE RISK OF INJURY.

To reduce the potential of injury to vehicle occupants, wheelchair-mounted accessories, including but not limited to IV poles, trays, respiratory equipment, backpacks, and other personal items should be removed and secured separately.

Postural supports, positioning devices, and/or strap(s) should not be relied on for occupant restraint. These items may be used **IN ADDITION TO** the wheelchair-anchored or vehicle-anchored belts.

Wheelchairs with adjustable seat angles **MUST** be set to 10°.

DO NOT alter or substitute wheelchair frame parts, components, or seating systems.

A sudden stop and/or collision may structurally damage your wheelchair.

Wheelchairs involved in such incidents should be replaced.

Spill proof batteries, such as “gel cells”, should be installed on wheelchairs to be used during travel in a motor vehicle.

Transport ready packages are not retrofittable to existing models and are not field serviceable.

⚠ WARNING

Only use the transport brackets included with TRRO and TRBKTS for the purposes described in this manual.

Battery support brackets MUST be installed at all times. Otherwise, the wheelchair will not be WC/19 compliant. Refer to Installing/Removing Batteries Into/From Battery Boxes on page 90.

About Transport Ready Packages

TRRO includes four factory-installed transport brackets and a wheelchair anchored pelvic belt. TRRO has been crash-tested in accordance with ANSI/RESNA WC Vol 1 Section 19 Frontal Impact Test requirements for wheelchairs with a 168 lb crash dummy, which corresponds to a person with a weight of 114 to 209 lbs.

TRBKTS includes four factory-installed wheelchair transport brackets. TRBKTS has not been crash-tested in accordance with WC 19. Use these transport brackets only to secure an unoccupied wheelchair during transport.

As of this date, the Department of Transportation has not approved any tie-down systems for transportation of a user while in a wheelchair, in a moving vehicle of any type. It is Invacare's position that users of wheelchairs should be transferred into appropriate seating in vehicles for transportation and use be made of the restraints made available by the auto industry. Invacare cannot and does not recommend any wheelchair transportation systems.

Compliance Information

This wheelchair conforms with the requirements of the ANSI/RESNA WC/Vol. 1 - Section 19.

NOTE: ANSI = American National Standards Institute, RESNA= Rehabilitation Engineering and Assistive Technology Society of North America.

This wheelchair has been dynamically tested in a forward-facing mode with the specified crash test dummy, which corresponds to a person **with a weight of 114-209 pounds**, restrained by BOTH pelvic and upper-torso belts in accordance with ANSI/RESNA WC Vol 1 Section 19. BOTH pelvic and upper-torso belts should be used to reduce the possibility of head and chest impacts with vehicle components.

Specifications

MODEL	MOTOR	WHEELCHAIR WEIGHT LIMIT	
		ADULT	JUNIOR
Arrow	GB	Up to 400 lbs	Up to 150 lbs
Torque SP	GB	Up to 400 lbs	Up to 150 lbs
Torque SP	4 Pole HD	Up to 400 lbs	Up to 150 lbs
Torque SP	4 Pole	Up to 300 lbs	Up to 150 lbs
Ranger X	GB	Up to 300 lbs	Up to 150 lbs
Ranger X	4 Pole	Up to 300 lbs	Up to 150 lbs

Securing the Wheelchair to the Vehicle

Positioning the Wheelchair in the Vehicle

⚠ WARNING

This wheelchair must be in a forward facing position during travel in a motor vehicle.

The recommended clear zones for wheelchair seated occupants restrained by **BOTH** pelvic and upper-torso belt(s) and **ONLY** by a pelvic belt are shown in the diagrams and described below.

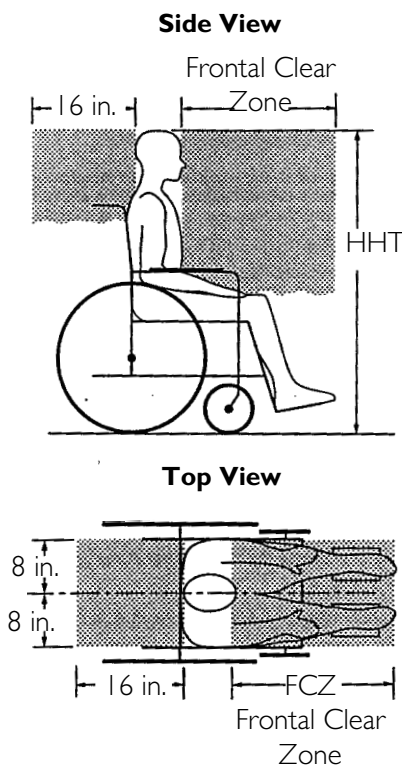
Frontal Clear Zones (FCZ) need to be **LARGER** when upper-torso belt(s) are **NOT** used.

The rear clear zone of 16-inches is measured from the rearmost point on an occupant's head.

The frontal clear zone is measured from the frontmost point on an occupant's head and is 26-inches with pelvic and upper-torso belt(s) and 37-inches with **ONLY** a pelvic belt.

The frontal clear zone may not be achievable for wheelchair-seated drivers.

The estimated seated height (HHT) from the ground or floor to the top of the wheelchair-seated occupant's head ranges from approximately 47-inches for a small adult female to about 61-inches for a tall adult male.



Securement Points

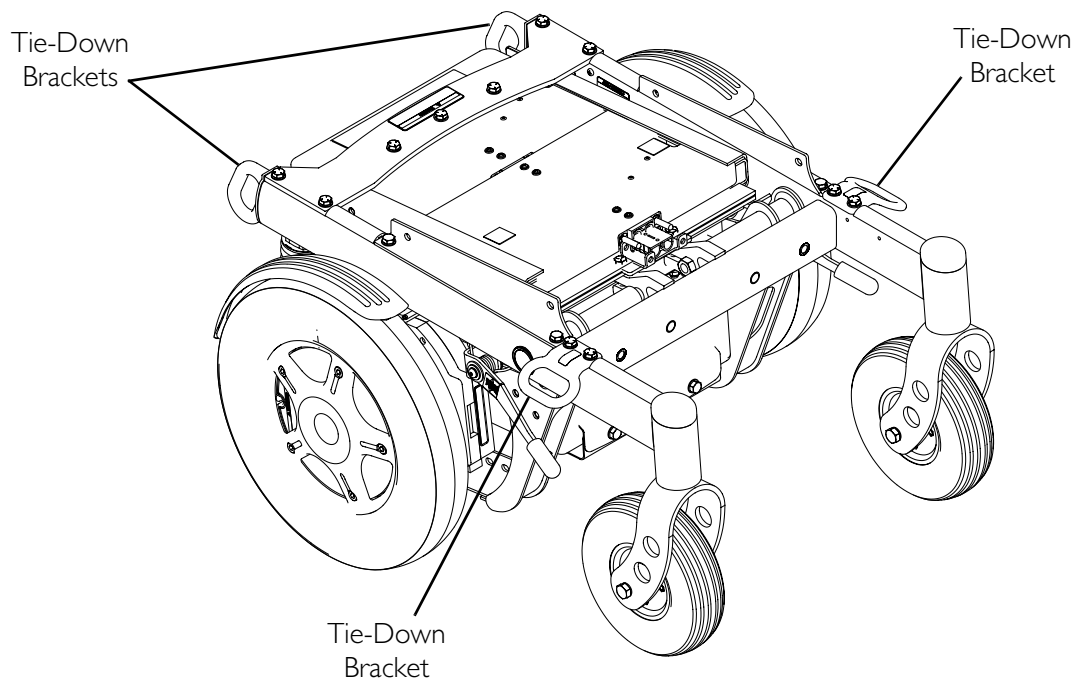


FIGURE 17.1 Securement Points

Securing the Wheelchair

This wheelchair is to be used only with Wheelchair Tie-down and Occupant Restraint Systems (WTORS) that have been installed in accordance with the manufacturer's instructions and SAE J2249.

NOTE: A copy of SAE J2249 Wheelchair Tie-down and Occupant Restraint Systems (WTORS) for use in Motor Vehicles can be obtained from: SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, (877) 606-7232 or (724) 776-4970.

Attach WTORS to the tie-down brackets in accordance with the manufacturer's instructions and SAE J2249.

Securing the Occupant

Wheelchair-Anchored Belts

⚠ WARNING

The pelvic belt that is provided by Invacare has been tested for use in a motor vehicle on this wheelchair ONLY. DO NOT replace the pelvic belt with a different style pelvic belt.

NOTE: For this procedure, refer to FIGURE 17.2.

The wheelchair has been provided with a pelvic belt which meets the requirements of ANSI/RESNA W/C 19.

The pelvic belt, provided by Invacare, has been designed to accommodate use on either side of the vehicle. If necessary, follow the instructions below to reverse the orientation of the pelvic belt to accommodate the vehicle-anchored upper-torso belt.

1. Install the pelvic belt pin (Detail "A" of FIGURE 17.2) into the large end of the slot in the belt mounting bracket. Rotate downward and forward until it snaps into place into the small end of the slot (Detail "B" or Detail "C").

NOTE: Note the position of the male end of the belt when installing the pelvic belt onto the belt mounting brackets. The male end of the pelvic belt (DETAIL "A" of FIGURE 17.2) has a pin which is used to secure the vehicle-anchored upper-torso belt.

2. Repeat STEP 1 for the opposite belt mounting bracket.
3. Install the vehicle-anchored upper-torso belt onto the pin on the male end of the pelvic belt.

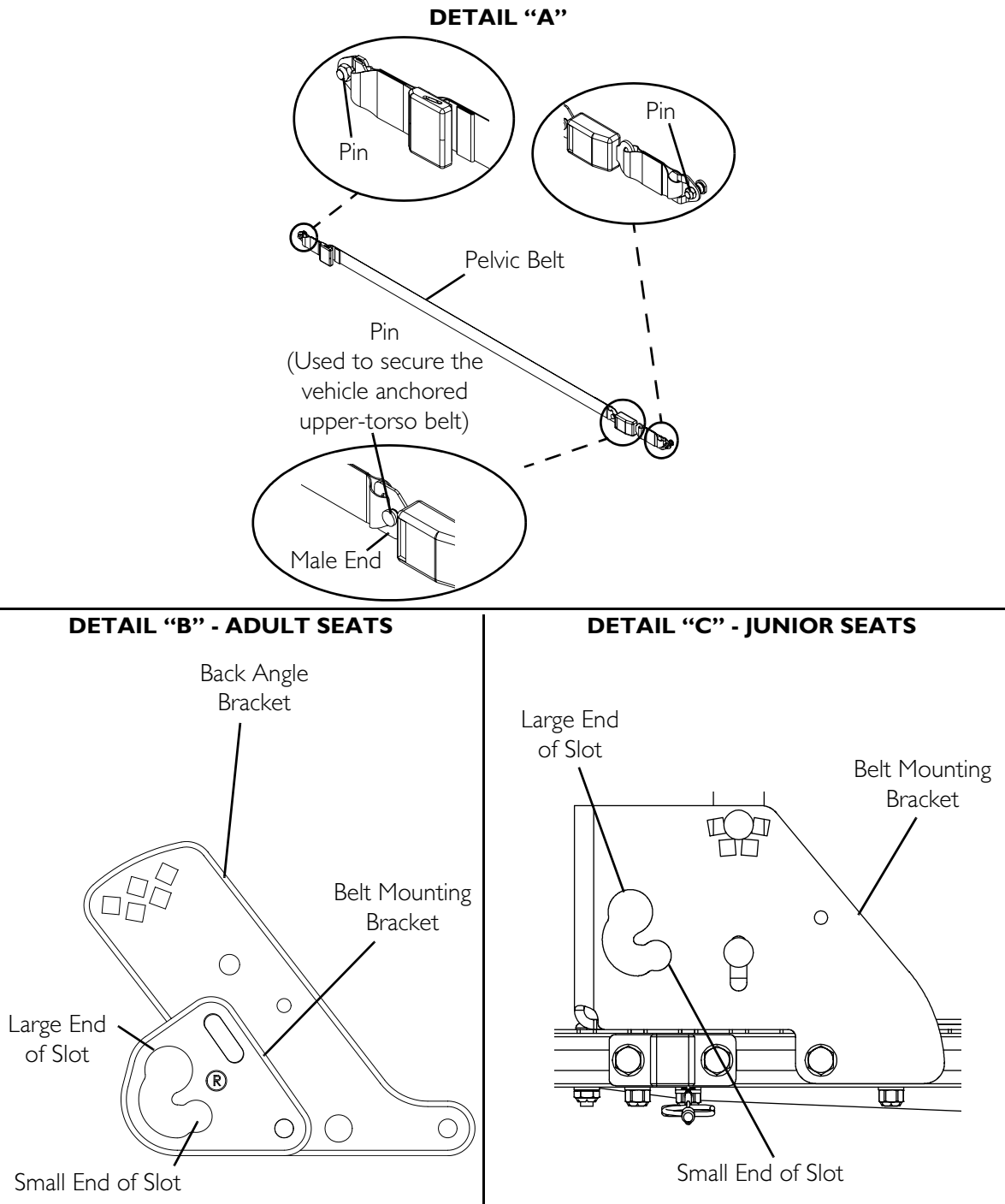


FIGURE 17.2 Wheelchair-Anchored Belts

Vehicle-Anchored Belts

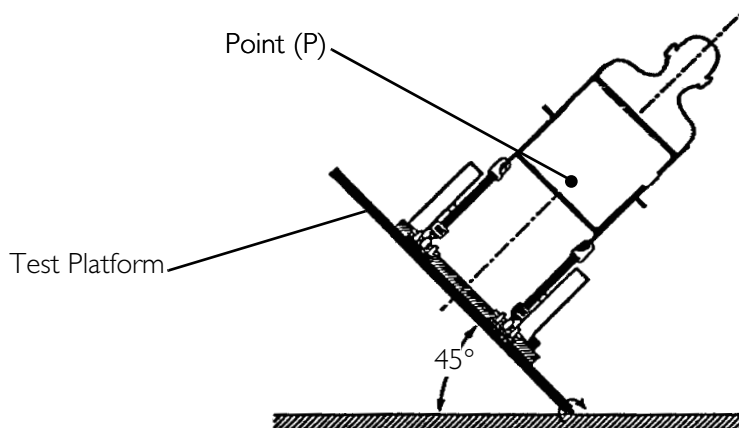
NOTE: For this procedure, refer to FIGURE 17.3.

This wheelchair has an overall rating of “A” with regard to accommodating the use and fit of vehicle-anchored belts. This rating is scored as follows:

RATING	DESCRIPTION
A	Excellent
B	Good
C	Fair
D	Poor

The test for Lateral Stability Displacement for Point (P) is shown in FIGURE 17.3. The average test result for point (P) is:

- Adult - 0.48 inches (12.3 mm)
- Junior - 0.54 inches (13.7 mm)



NOTE: Rear view of the wheelchair and human surrogate secured on test platform and tilted to 45°.

FIGURE 17.3 Vehicle-Anchored Belts

Seating System

⚠ WARNING

This wheelchair has been tested for seating in a motor vehicle with the factory installed seating system ONLY.

Ensure that the factory installed seating system is secured to the wheelchair frame before operation. Refer to the seating system owner's manual.

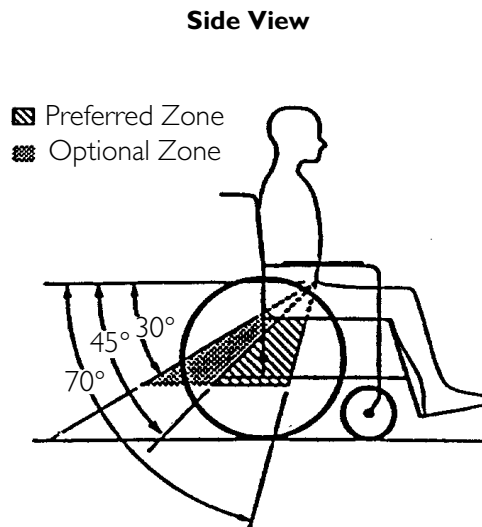
Positioning Belts

⚠ WARNING

The angle of the pelvic belt should be within the preferred zone of 45 to 75 degrees to the horizontal **OR** within the optional zone of 30 to 45 degrees to the horizontal.

Steeper side-view pelvic belt angles are especially important if the pelvic belt is intended to be used for postural support in addition to occupant restraint in a frontal crash. Steeper angles will reduce the tendency for a vertical gap to develop between the user and the belt due to compliance of seat cushions and belt movement, thereby reducing the tendency for the user to slip under the belt and for the belt to ride up on the soft abdomen during normal use.

Steeper belt angles also reduce the tendency for upper-torso belts to pull the pelvic belt onto the abdomen during frontal impact loading.



NOTE: For this procedure, refer to FIGURE 17.4.

1. The pelvic belt should be worn low across the front of the pelvis.
2. Position the upper-torso belt(s) over the shoulders.
3. The belt(s) should not be held away from the body by wheelchair components or parts, including but not limited to wheelchair armrests or wheels. Refer to FIGURE 17.4 for proper and improper positioning of the belts.
4. Ensure the belt(s) are not twisted.
5. Adjust belts as firmly as possible, being mindful of user comfort.

**DO POSITION BELT INSIDE OF
ARMRESTS, WHEELS, ETC.**



**DO NOT POSITION BELT OUTSIDE OF
ARMRESTS, WHEELS, ETC.**



FIGURE 17.4 Positioning Belts

NOTES

GLOBAL LIMITED WARRANTY (EXCLUDING CANADA)

PLEASE NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.

This warranty is extended only to the original purchaser who purchases this product within any country excluding **CANADA** when new and unused from Invacare or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person. For product purchased in Canada, please refer to the **Canada Limited Warranty**.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

Invacare warrants the base frame to be free from defects in materials and workmanship for a period of five (5) years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all electronics and electrical components (excluding batteries), motors (including gearless/brushless), powered seating actuators and gearboxes for a period of one (1) year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all batteries for a period of six (6) months from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all remaining components (excluding all upholstered materials, padded materials, tires and wheels) for a period of one (1) year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. If within such warranty periods any such product component shall be proven to be defective, the product component shall be repaired or replaced, at Invacare's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Invacare's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

For warranty service, please contact the dealer from whom you purchased your Invacare product. In the event you do not receive satisfactory warranty service, please write directly to Invacare at the address on the bottom of the back cover. Provide dealer's name address, date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

LIMITATIONS AND EXCLUSIONS: THE FOREGOING WARRANTY SHALL NOT APPLY TO SERIAL NUMBERED PRODUCTS IF THE SERIAL NUMBER HAS BEEN REMOVED OR DEFACED, PRODUCTS SUBJECT TO NEGLIGENCE, ACCIDENT, IMPROPER OPERATION, MAINTENANCE OR STORAGE, COMMERCIAL OR INSTITUTIONAL USE, PRODUCTS MODIFIED WITHOUT INVACARE'S EXPRESS WRITTEN CONSENT (INCLUDING, BUT NOT LIMITED TO, MODIFICATION THROUGH THE USE OF UNAUTHORIZED PARTS OR ATTACHMENTS); PRODUCTS DAMAGED BY REASON OF REPAIRS MADE TO ANY COMPONENT WITHOUT THE SPECIFIC CONSENT OF INVACARE, OR TO A PRODUCT DAMAGED BY CIRCUMSTANCES BEYOND INVACARE'S CONTROL, AND SUCH EVALUATION WILL BE SOLELY DETERMINED BY INVACARE. THE WARRANTY SHALL NOT APPLY TO PROBLEMS ARISING FROM NORMAL WEAR AND TEAR OR FAILURE TO ADHERE TO THE PRODUCT INSTRUCTIONS. A CHANGE IN OPERATING NOISE, PARTICULARLY RELATIVE TO MOTORS AND GEARBOXES DOES NOT CONSTITUTE A FAILURE OR DEFECT AND WILL NOT BE REPAIRED; ALL DEVICES WILL EXHIBIT CHANGES IN OPERATING NOISE DUE TO AGING.

THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES WHATSOEVER, WHETHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND THE SOLE REMEDY FOR VIOLATIONS OF ANY WARRANTY WHATSOEVER, SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT PURSUANT TO THE TERMS CONTAINED HEREIN. THE APPLICATION OF ANY IMPLIED WARRANTY WHATSOEVER SHALL NOT EXTEND BEYOND THE DURATION OF THE EXPRESS WARRANTY PROVIDED HEREIN AND INVACARE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES WHATSOEVER; SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGE, OR LIMITATION OF HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE EXCLUSION AND LIMITATION MAY NOT BE APPLICABLE. THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE/PROVINCIAL LAWS AND REQUIREMENTS.

CANADA LIMITED WARRANTY

PLEASE NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.

This warranty is extended only to the original purchaser who purchases this product within Canada when new and unused from Invacare or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

Invacare warrants the base frame and gearless/brushless motors to be free from defects in materials and workmanship for a period of five (5) years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all electronics and electrical components (excluding batteries), powered seating actuators, 4-pole motors and gearboxes for a period of one (1) year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all batteries for a period of six (6) months from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all remaining components (excluding all upholstered materials, padded materials, tires and wheels) for a period of one (1) year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. If within such warranty periods any such product component shall be proven to be defective, the product component shall be repaired or replaced, at Invacare's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Invacare's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

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